

AC Current Probe

Model MN103

User Manual

DESCRIPTION

The MN103 (Catalog #1031.02) measures leakage current and low currents from 1 mA, and measures current on 5A secondaries. This current probe provides AC current measuring capabilities to instruments with mV inputs. The Model MN103 offers a 5 ft lead with safety 4mm banana plug.

WARNING

These safety warnings are provided to ensure the safety of personnel and proper operation of the instrument.

- Read the instruction manual completely and follow all the safety information before attempting to use or service this instrument.
- Use caution on any circuit: Potentially high voltages and currents may be present and may pose a shock hazard.
- Read the safety specifications section prior to using the current probe. Never exceed the maximum voltage ratings given.
- Safety is the responsibility of the operator.
- ALWAYS connect the current probe to the display device before clamping the probe onto the sample being tested.
- ALWAYS inspect the instrument, probe, probe cable, and output terminals prior to use. Replace any defective parts immediately.
- NEVER use the current probe on electrical conductors rated above 250V. Use extreme caution when clamping around bare conductors or bus bars.

INTERNATIONAL ELECTRICAL SYMBOLS



This symbol signifies that the current probe is protected by double or reinforced insulation. Use only factory specified replacement parts when servicing the instrument.



This symbol signifies CAUTION! and requests that the user refer to the user manual before using the instrument.



This is a type A current sensor. This symbol signifies that application around and removal from HAZARDOUS LIVE conductors is permitted.

RECEIVING YOUR SHIPMENT

Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage.

PACKAGING

The AC Current Probe MN103 is shipped with this instruction manual and a product warranty and registration card. (Register online at www.aemc.com).

INSTRUMENT COMPATIBILITY

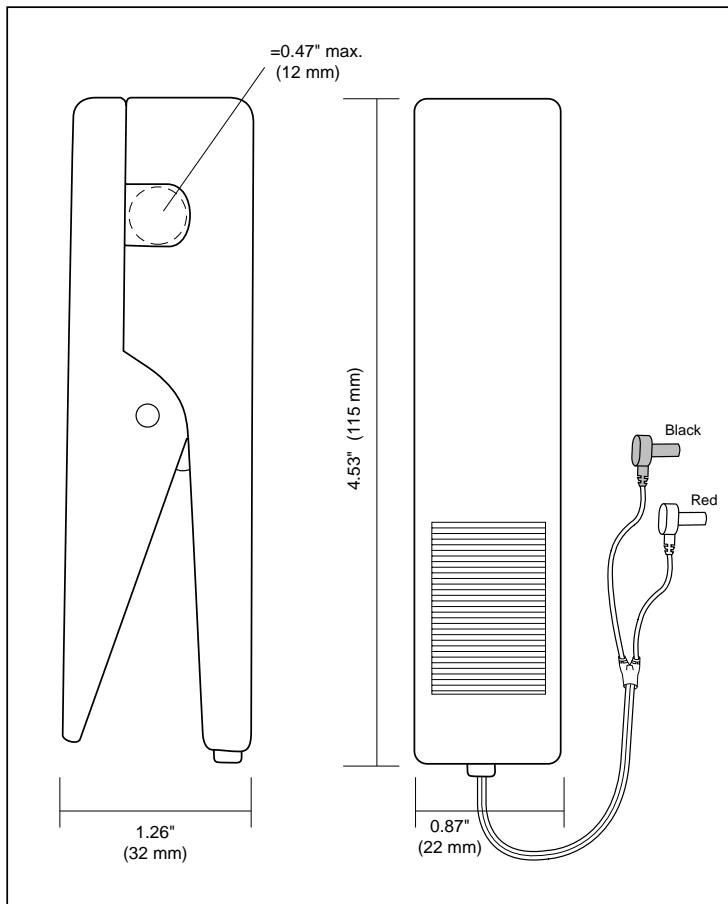
The Model MN103 is compatible with any AC voltmeter, multimeter, or other voltage measurement instrument with an input impedance of 100kΩ or greater. To achieve the stated accuracy, use the MN103 with a voltmeter having an accuracy of 1% or better.

Quality AEMC Products Online at:

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ELECTRICAL SPECIFICATIONS

Current Range (low):

10A: 1mA to 10A AC

Output Signal:

1mV AC/ma AC (10V @ 10A)

Accuracy *:

Accuracy: 1mA to 10A AC

45 to 65Hz: $\pm 3\%$ reading $\pm 1\text{mA}$

>65 to 500Hz: -2, +6% reading $\pm 1\text{mA}$

Current Range (high):

100A: 1 to 100A AC

Output Signal:

1mV AC/A AC

(100mV @ 100A)

Load Impedance:

100K Ω min

Accuracy *:

Accuracy: 1A to 100A AC
45 to 65Hz: $\pm 2\%$ reading $\pm 0.1\text{A}$
 >65 to 500Hz : -2, +3% reading $\pm 0.1\text{A}$

*Reference conditions: $23^\circ\text{C} \pm 3^\circ\text{K}$, 20 to 70% RH, external magnetic field $< 40\text{A/m}$, no DC component, no external current carrying conductor, test sample centered. Load impedance $1\text{M}\Omega$.

Frequency Range:

45 to 500Hz

Working Voltage:

250V AC

Common Mode Voltage:

250V AC

Calibration Check:

Recommended once a year

MECHANICAL SPECIFICATIONS**Operating Temperature:**

14° to 122°F (-10° to 50°C)

Storage Temperature:

-40° to 176°F (-40° to 80°C)

Maximum Cable Diameter:

$0.47"$ \varnothing max. (12mm)

Dimensions:

$1.26 \times 4.53 \times 0.87"$
($32 \times 115 \times 22\text{mm}$)

Weight:

5.6 oz (160g)

Polycarbonate Material:

Handle: 10% Fiberglass charged polycarbonate UL 94 V0

Output:

MN103: Double/reinforced insulated 5 ft (1.5m) lead with safety 4mm banana plug

SAFETY SPECIFICATIONS**Electrical (IEC 414):**

250V working voltage

250V max common mode between output and ground

3kV 50/60 Hz dielectric for 1 mn

ORDERING INFORMATION**AC Current Probe**

MN103.....Cat #1031.02

Accessories:

Banana plug adapter
(to nonrecessed plug)Cat #1017.45

OPERATION

Making Measurements with the AC Current Probe Model MN103

- Connect the black lead of the current probe to "common" and the red lead to the AC voltage range on your DMM or other voltage measuring instrument. The "10A" range has an output signal of 1mV/mA AC. This means that for 10A AC in a conductor around which the probe is clamped, 10V AC will come out of the probe leads to your DMM or instrument. The "100A" range has an output signal of 1mV/A AC. This means that for 100A AC in a conductor around which the probe is clamped, 100mV AC will come out of the probe leads to your DMM or instrument. Select the range on your DMM or instrument which corresponds best to the measured current. If the current magnitude is unknown, start with the highest range first and work down until the appropriate range and resolution is reached. Clamp the probe around the conductor. Take the reading on the meter and multiply it by the output signal used to obtain the measured current. (e.g. If the meter reads 100.5mV [range 1mV/mA], then current equals 100.5mA AC). Unclamp the probe from the conductor before disconnecting it from your DMM or instrument.

- For best accuracy, avoid if possible, the proximity of other conductors which may create noise.

Tips for Making Precise Measurements

- When using a current probe with a meter, it is important to select the range that provides the best resolution. Failure to do this may result in measurement errors.
- Make sure that probe jaw mating surfaces are free of dust and contamination. Contaminants cause air gaps between the jaws, increasing the phase shift between primary and secondary. It is very critical for power measurement.

MAINTENANCE

Warning:

- For maintenance use only original factory replacement parts.
- To avoid electrical shock, do not attempt to perform any servicing unless you are qualified to do so.
- To avoid electrical shock and/or damage to the instrument, do not get water or other foreign agents into the probe

Cleaning:

To ensure optimum performance, it is important to keep the probe jaw mating surfaces clean at all times. Failure to do so may result in error in readings. To clean the probe jaws, use very fine sand paper (fine 600) to avoid scratching the jaw, then gently clean with a soft oiled cloth.

REPAIR AND CALIBRATION

You must contact our Service Center for a Customer Service Authorization number (CSA#). This will ensure that when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container. If the instrument is returned for calibration, we need to know if you want a standard calibration, or a calibration traceable to N.I.S.T. (includes calibration certificate plus recorded calibration data).

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repair@aemc.com

(Or contact your authorized distributor)

Costs for repair, standard calibration, and calibration traceable to N.I.S.T. are available.

NOTE: All customers must obtain a CSA# before returning any instrument.

TECHNICAL AND SALES ASSISTANCE

If you are experiencing any technical problems, or require any assistance with the proper use or application of this instrument, please call our technical hotline:

(800) 343-1391 • (508) 698-2115 • Fax (508) 698-2118
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